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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,175	11/25/2003	Sadahito Misumi	UNIU79.016AUS	8536

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EXAMINER
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MCCLENDON, SANZA L

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/722,175	<b>Applicant(s)</b> MISUMI ET AL.	
	<b>Examiner</b> Sanza L McClendon	<b>Art Unit</b> 1711	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-19 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/03 &amp; 6/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 4-5, 8-9, and 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Ikemura et al (EP 1 009 025).

Ikemura et al teaches epoxy compositions for use in semi-conductor devices. Said epoxy composition comprises an epoxy resin (A), a phenol resin (B), a cure accelerator (C), and a cure accelerator containing microcapsules having a core/shell structure (D), wherein a cure accelerator is in the core and the shell is a thermoplastic resin. Said epoxy resin can be biphenyl type epoxy resin, or a novolak epoxy resin. Said biphenyl can be represented by the formula on page 3. The phenolic resin can be a phenol-novolak resin or a phenol aralkyl resin having the formula, also found on page 3. The cure accelerator (C) can be an amine compound, an organometallic salt, a phosphorous compound, a diazabicycloalkane, or derivatives of such. The thermoplastic resin can be polyurea compound. Said polyurea compound are used in a combination of polyurea compounds prepared from triisocyanates having the formulas (I) and (II), which are found in ratios from 100/0 to 30/70 in the composition. In addition, said composition can also have inorganic fillers and synthetic rubbers—see page 6, paragraph [0049]. The compositions as taught by Ikemura et al appear to anticipate the instant composition as found in the instant claim, therefore the composition should be capable of being used in the same manner as found in claim 15-19.

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4. Claims 1-2, 4-5, 8-9, and 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Ikemura et al (US 6,248,454).

Ikemura et al teaches epoxy compositions for use in semi-conductor devices. Said epoxy composition comprises an epoxy resin (A), a phenol resin (B), a cure accelerator (C), and a cure accelerator containing microcapsules having a core/shell structure (D), wherein a cure accelerator is in the core and the shell is a thermoplastic resin. Said epoxy resin can be biphenyl type epoxy resin, or a novolak epoxy resin. Said biphenyl can be represented by the formula found in column 3. The phenolic resin can be a phenol-novolak resin or a phenol aralkyl resin having the formula, also found in column 3. The cure accelerator (C) can be an amine compound, an organometallic salt, a phosphorous compound, a diazabicycloalkane, or derivatives of such. The thermoplastic resin can be polyurea compound. Said polyurea compound are used in a combination of polyurea compounds prepared from triisocyanates having the formulas (I) and (II), which are found in ratios from 100/0 to 30/70 in the composition. In addition, said composition can also have inorganic fillers and synthetic rubbers—see column 5, lines 5-20. The compositions as taught by Ikemura et al appear to anticipate the instant composition as found in the instant claim, therefore the composition should be capable of being used in the same manner as found in claim 15-19.

5. Claims 1-2, 4-5, 8-9, and 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Misumi et al (JP 10-189832).

Misumi et al teaches epoxy resin compositions for use in semiconductor devices. Said composition comprises an epoxy resin, a phenolic resin, rubber particles, inorganic filler, and a core/shell micro-particles, wherein said core comprises a hardener and the shell comprises a thermoplastic resin. Said epoxy resin can be novolak epoxy resin, such as cresol or phenol novolak resin, or biphenol containing epoxy resin—see formula 1 in paragraph [0012]. The phenolic resin can be phenol novolak resins or phenol aralkyl resin—see formula 2 in paragraph [0016]. The hardener accelerator in the microcapsules can be amine systems, imidazole systems, boron systems or phosphorous systems—see paragraph [0022]. The thermoplastic shell part can be a polyurea compound having repeat units such as found in paragraph [0026]. Said polyurea a preferable prepared from diisocyanates, such as xylylene diisocyanates, tolylene diisocyanate or other diisocyanates in paragraph [0029] with trimethylol propane. Per the examples Misumi et al teaches preparing the polyurea using 3 moles of xylylene diisocyanate with 1 mole of trimethylol propane in the epoxy compositions. This appears to anticipate claim 2 when the ratio chemical formula 1 to chemical formula 2 is 100/0. The rubber particles can be found in paragraph [0042]. The inorganic filler can be found in paragraph [0046]. The compositions as taught by Misumi et al appear to

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anticipates the instant composition as found in the instant claim, therefore the composition should be capable of being used in the same manner as found in claim 15-19.

*Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-2, 5, 8, 11, and 13-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akada et al (5,304,418) in view of Ikemura et al (EP 1009025).

Akada et al teaches dicing-die bonding films comprising a substrate, a UV curable pressure sensitive adhesive layer, and an adhesive layer for supporting semiconductor wafers. Per example 1, Akada et al teaches an adhesive composition for bonding said wafer. Said composition comprises a carboxylated acrylonitrile-butadiene copolymer rubber, a bisphenol A epoxy resin, a phenol novolak resin and a curing agent. Akada et al does not expressly teach using a microencapsulated cure hardener cover by a thermoplastic shell. However Ikemura et al teaches microencapsulated cure accelerators having thermoplastic shell, such as a polyurea, are well known in the use of epoxy resin adhesive compositions.

Akada et al and Ikemura et al are analogous because they are from the same field of endeavor that is the art of bonding agents for use in semiconductor devices. Therefore it would have been obvious for an ordinary skilled artisan to use a microencapsulated curing accelerator covered by a thermoplastic shell, such as polyurea, as taught by Ikemura et al, in the compositions as described by Akada et al. The motivation would have been a reasonable expectation of obtaining an epoxy adhesive composition having both storage stability and rapid curability as taught by Ikemura et al (EP 1009025 page 2, [0006]) in the absence of evidence to the contrary and/or unexpected results.

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The combined compositions as taught by Akada et al and Ikemura et al appear to read on the instantly claimed composition, therefore the composition should be capable of being used in the same manner as found in claim 15-19.

8. Claims 1-2, 5, 8, and 10-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akada et al (5,304,418) in view of Ikemura et al (EP 1009025) as applied to claims 1-2, 5, 8, 11 and 13-19 above, and further in view of Sawamura et al (6,716,529).

Akada et al and Ikemura et al do not expressly teach using acrylonitrile-butadiene or carboxylated acrylic synthetic rubbers in the epoxy compositions, even though both teach adding synthetic rubber components in the compositions. Sawamura et al teaches epoxide containing adhesives for use in semiconductor manufacturing, which include thermoplastic resins for enhancement of adhesiveness and flexibility in the adhesive. Said thermoplastic resins include acrylonitrile-butadiene (NBR) rubber that can be modified with carboxyl groups or without modification and acrylic rubbers that have not or have been modified with carboxyl or other modifying groups—see column 8, lines 10-40.

Akada et al, Ikemura et al, and Sawamura et al are analogous because they are from the same field of endeavor that is the art of bonding agents for use in semiconductor devices. Therefore it would have been obvious for an artisan of ordinary skill in the art to use other synthetic rubbers, such as those taught by Sawamura et al, in the combined compositions of Akada et al and Ikemura et al. The motivation would have been a reasonable expectation of obtaining an epoxy adhesive composition with enhanced bonding and flexibility properties as suggested by Sawamura et al in the absence of evidence to the contrary and/or unexpected results.

9. Claims 1-2, 5-8, and 10-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akada et al (5,304,418) in view of Ikemura et al (EP 1009025) and Sawamura et al (6,716,529) as applied to claims 1-2, 5, 8, and 10-19 above, and further in view of Eadara (US 5,198,065).

Akada et al, Ikemura et al, and Sawamura et al do not expressly teach using tris hydroxyphenylmethane or tetraphenylol ethane type epoxide resins in taught adhesive compositions. However Eadara teaches these type epoxide resins are known for use in epoxy/hardener adhesive compositions—see columns 2, lines 65 to end to column 3, lines 50. Akada et al, Ikemura et al, Sawamura et al, and Eadara et al are analogous because they are from the same field of endeavor that is the art of epoxy/hardener adhesive compositions. Therefore since these epoxy resin are well known in the art of epoxide adhesives as taught by Eadara, it would have been obvious for a artisan

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of ordinary skill level to use these well known epoxy resin in the compositions as suggest by the prior art made of record. The motivation would have been a reasonable expectation of obtaining an adhesive composition with adequate results, such as suggested by the prior art made of record in the absence of unexpected results and/or evidence to the contrary.

*Allowable Subject Matter*

10. Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to teach an adhesive composition as suggested by instant claim 1, wherein the microcapsule shell is a formed from a polyurea having the triisocyanates compound of formula 3.

*Conclusion*

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sanza L McClendon whose telephone number is (571) 272-1074. The examiner can normally be reached on Monday through Friday 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

 3/1/05  
Sanza L McClendon

Examiner

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SMc